

App. No. 10/719,629

Reply to Office action of March 9, 2006

REMARKS/ARGUMENTS**A. Summary of the Amendment**

This is a full and timely response to the non-final Office Action dated March 9, 2006. Reexamination and reconsideration are courteously requested. By way of the present amendment, claims 1 and 8 are amended. No claims are added or canceled. Claims 36 to 71 have been withdrawn as the result of an earlier restriction requirement. Thus, claims 1 to 35 remain pending for the Examiner's consideration, with claims 1, 10, 17, and 22 being independent claims.

B. Allowable Subject Matter

The examiner has acknowledged that claims 14, 20, and 27 are directed to allowable subject matter. Applicants thank the Examiner for a through examination of these claims.

C. Restriction Requirement

In view of the restriction requirement, claims 1 to 35 have been elected, and claims 36 to 71 have been canceled without prejudice or disclaimer as to their presentation in a divisional application.

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D. Claim Objections and Rejections Under 35 U.S.C. § 112, Second Paragraph

Claim 6 is rejected as being indefinite, and the Examiner asks if the word "and" in line 3 should be replaced with "or." Claim 6 should not be changed in this respect, as it corresponds with the description in the specification in paragraph 0031.

Claim 8 is objected to for reciting "zirconia oxide," which is not the proper name for an oxide of zirconium. This error is corrected by way of the present amendment.

E. Rejections Under 35 U.S.C. § 102(e)

Claims 1, 3 to 4, 6, 8 to 10, 17, and 21 to 22 are rejected as being anticipated by U.S. Patent No. 6,759,151 (Lee '151). These rejections are respectfully traversed.

Each of the pending independent claims recites in some form a protective barrier coating that includes an oxidation barrier coating and an environmental barrier coating, at least one of which includes a metal disilicide. In contrast, Lee '151 discloses various protective coatings that may include one or more of several different disclosed metal silicides, including mullite and various other aluminosilicates and rare earth silicates. However, none of the protective coatings disclosed by Lee includes a metal disilicide, meaning a metal compound that includes or is formed from the disilicate ion $\text{Si}_2\text{O}_7^{6-}$. Since Lee '151 fails to teach or suggest oxidation barrier coatings or environmental barrier coatings as presently claimed, the rejections under 35 U.S.C. § 102 should be withdrawn.

Further, each of the independent claims recites a diffusion barrier coating formed on a silicon based substrate. Independent claim 17 more particularly recites that silicon based substrate is a particular silicon based ceramic and that the diffusion barrier coating coated thereon is substantially pure Si_3N_4 , SiC or Si_2ON_2 . Turning briefly to the specification in paragraphs 0026 to 0027, the benefits of this diffusion barrier coating is explained. Cations (i.e. from lanthanum or yttrium compounds) that are commonly produced as a result of sintering aids used to create ceramic substrates are likely to diffuse out of the substrate and

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into a protective coating formed thereon. The diffusion barrier coating of the present invention, i.e. having substantially pure silicon ceramics or oxynitrides, allows the use of such sintering aids without degrading overlying oxidation barrier coatings or environmental barrier coatings.

Lee '151 fails to teach or suggest the diffusion barrier coating claimed in the present independent claims. The Examiner asserts that the substrates disclosed in Lee '151 are silicon ceramics such as silicon carbide and silicon nitride. However, without providing any disclosure of a diffusion barrier coating formed over such substrates, Lee '151 fails to anticipate the claims. For this additional reason, the rejections based on Lee '151 should be withdrawn.

F. Rejections Under 35 U.S.C. § 103(a)

Claims 1 to 13, 15 to 19, 21 to 16, and 28 to 35 are rejected as being unpatentable over Lee '151 in view of U.S. Patent No. 6,733,908 (Lee '908). These rejections are respectfully traversed for the same reasons set forth above. Lee '908 fails to compensate for the deficient teachings of Lee '151. Lee '908 fails to teach or suggest the use of metal disilicides in an oxidation barrier coating and/or an environmental barrier coating as recited in the pending independent claims. Further, Lee '908 fails to teach a diffusion barrier coating as recited in the pending independent claims. For this reason, the rejections under 35 U.S.C. § 103 should be withdrawn.

G. Conclusion

In view of Applicant's amendments and remarks, it is respectfully submitted that Examiner's objections and rejections have been overcome. Accordingly, Applicants respectfully submit that the application is now in condition for allowance, and such allowance is therefore earnestly requested. Should the Examiner have any questions or wish to further

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discuss this application, Applicants request that the Examiner contact the Applicants attorneys at the below-listed telephone number. If for some reason Applicants have not requested a sufficient extension and/or have not paid a sufficient fee for this response and/or for the extension necessary to prevent abandonment on this application, please consider this as a request for an extension for the required time period and/or authorization to charge Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

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Dated: June 7, 2006By: 

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